I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated   14 May 2001

Patents Form 1/77

. atents Act 1977
(Rule 16)

The Patent Office

Request for a grant of a patent

*(See the notes on the back of this form. You can also get
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K 1-7 MAY 1999 RECEIVED BY HAND THE PATENT OFFICE

The Patent Office

Cardiff Road
Newport
Gwent NP9 1RH

1.	Your reference	P/6837.GB

07 MAY 1900

2.	Patent application number *(The Patent Office will fill in this part)*	**9910684.1**

3.	Full name, address and postcode of the or of each applicant *(underline all surnames)*	Argo Interactive Limited 7 Dukes Court Chichester West Sussex PO19 2FX
	Patents ADP number *(if you know it)*	7606734 001
	If the applicant is a corporate body, give the country/state of its incorporation	United Kingdom

4.	Title of the invention	Data Processing Apparatus

5.	Name of your agent *(if you have one)*	D YOUNG & CO
	"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*	21 NEW FETTER LANE LONDON EC4A 1DA
	Patents ADP number *(if you have one)*	59006

		Country	Priority application number *(if you know it)*	Date of filing *(day/month/year)*
6.	If you are declaring priority from one or more earlier patent applications, give the country and date of filing of the or each of these earlier applications and (if you know it) the or each application number			

		Number of earlier application	Date of filing *(day/month/year)*
7.	If this application is divided or otherwise derived from an earlier UK application, give the number and filing date of the earlier application		

8. Is a statement of inventorship an[●]ight to grant of a patent required in support of this request? Answer 'Yes' if:
a) *any applicant named in part 3 is not an inventor, or*
b) *there is an inventor who is not named as an applicant, or*
c) *any named applicant is a corporate body.*
See note (d))

Yes

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form 0

Description 3

Claims(s) 0

Abstract 0

Drawing(s) 0

10. If you are also filing any of the following, state how many against each item.

Priority documents 0

Translations of priority documents 0

Statement of inventorship and right to grant of a patent *(Patents Form 7/77)* 0

Request for preliminary examination and search *(Patents Form 9/77)* 0

Request for substantive examination *(Patents Form 10/77)* 0

Any other documents *(please specify)* 0

11.

I/We request the grant of a patent on the basis of this application.

Signature

D Young & Co

D YOUNG & CO
Agents for the Applicants

Date

07 May 1999

12. Name and daytime telephone number of the person to contact in the United Kingdom

N A J Robinson

01703 634816

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 01645 500505

b) Write your answers in capital letters using black ink or you may type them

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d) If you answered 'Yes' Patents Form 7/77 will need to be filed.

e) Once you have filled in the form you must remember to sign and date it.

f) For details of the fee and ways to pay please contact the Patent Office.

Provisional Patent Application

P/6837.43

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A system to Categorise Links within a Hypertext Document

Ov rview:

A majority of information currently available in HTML and other mark-up languages has been designed for display on a Desktop Computer Monitor of a typical resolution of 640 by 480 or 1024 by 768 pixels. A typical small screen device only has a resolution of 120 by 90. This system has been designed to re-process the original document into a format that will be easier to interpret and understand on a small screen device.

This system has been designed for the purposes of converting information published in a hypertext mark-up language, to a format more suitable for small screen device. In a typical installation, the hypertext language would be HTML and the destination device would be PDA (Personal Digital Assistant) or Mobile phone.

The system can be used on any mark-up language and work both locally as well as across a network.

Problem:

In many cases, authors of hypertext documents do not provide adequate assistance to readers for proper navigation of their work. It is an increasingly common experience to be 'lost in hyperspace' when trying to read hypertext. One common difficulty arises after the author of a document has provided links to other pages based only on their own perspective of the subject. If another reader who is unfamiliar with their ideas and language reads it, they may be quite unable to identify relevant sections.

If viewed in an abbreviated form on a computer with a small display, it may be even more difficult to work out which items are related, and what they mean. More information on the subject of a content section could be useful to readers, as it would enable them to make more intelligent decisions.

Solution:

Argo proposes a system of computer software, through which users are required to fetch hypertext documents that they wish to read. Typically this is in the form of an intermediate 'proxy server' but a stand-alone mode of operation can also be envisaged. The system processes the hypertext pages as they are transferred from the storage location to the reader, modifying parts, recording what it has found, and performing other tasks.

Hypertext documents normally contain links to further hypertext information allowing traversal through information. Argo's system analyses these links and associated text, and allocates a category name from a known list.

The categorisation is achieved by key-word and key-phrase matching of the target of a link (its Uniform Resource Identifier, or 'URI') or the text which is displayed for a link. Selected categories are known to have relationships to particular words and phrases. The category of each link is identified and written back into the document as an

additional tag for further processing by other parts of the system, and may also be recorded in the databases.

An example of the categorisation method (shown here in HTML) is as follows:
```
<a href="../cars.html">Buying a new car</a>
```

In Argo's invention, the keyword to category database might contain the keywords: "Car, Motorcycle, Bike, Lorry, Van" and others, in relation to the category "Transport". The system would search both the URI (in this case given in its relative form as "../cars.html") and the associated text, "Buying a new car". Thus the above example will show that the hypertext link is in the category "transport".

Where two or more categories are found to have words or phrases that appear in the link, a priority system will be used to choose one. In its simplest form, this might be based on the order of the key words. Thus the word 'Car' might have precedence over other categories while 'Van' might not. Also, there may be a priority system between categories such that if the word 'Van' was found, it would be more likely to relate to vehicles than to military infantry strategy. As yet another option, links with several matching words could take precedence over those with just a single match. Various other selection systems can be envisaged.

It may also be useful to group categories into super-categories and thus into a hierarchy of subjects. This could have advantages in further processing. For example, if specific car manufacturers are named in a series of links and there are no links to categories other than cars, then the categories chosen could be narrowed to name those manufacturers instead of all being set to 'transport'. In this way the system could present options which always differentiate usefully between the choices on any given page.
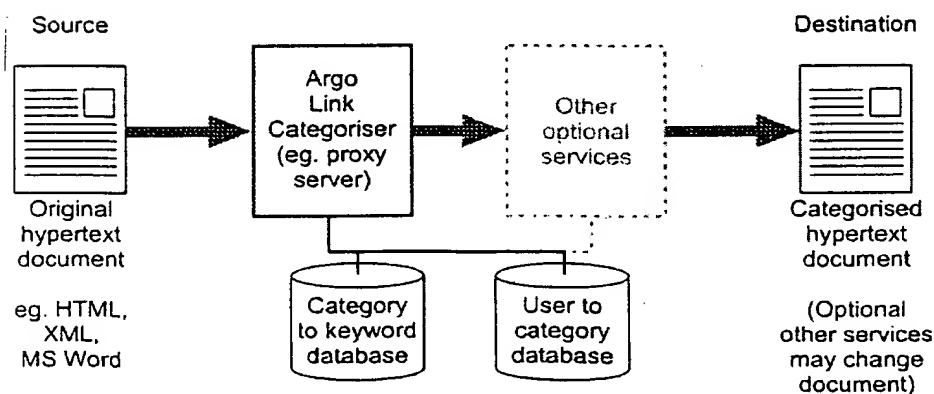
The category database would be built initially by people examining popular hypertext documents and recording the subject matter found along with the words used. A system that automatically develops such a database can be envisaged; for example it might fetch the pages being targeted and then analyse their content in relation to the text

used to present the original link.

As shown in the diagram, the hypertext document is passed through the system before delivery to the reader. The system has a keyword-to-category translation database and other features. The diagram also indicates optional services that might use the categorisation information to adapt the hypertext document contents. One example is the 'Graphical Icon Allocator' described in a related document.

Once this category information has been collected for all of the hypertext links, it is possible to enhance the original hypertext document. Methods include:
- Automatically inserting a graphical icon before each hypertext link to assist in faster recognition of links of interest
- Filtering out of categories that are known to be unsuitable or undesirable for the user, for example if the reader is known by some user-profiling software not to want information on cars.
- By recording the link categories that the user selects while viewing hypertext documents, it is possible to build a profile of the user's interests which can in turn be used to present other relevant information such as targeted advertising.
- Pre-fetching of information relevant to the user's interests. Using pre-fetching, the system automatically collects and stores information that the user is likely to want to view before they request it. If they do request it, it can be delivered more quickly. If they do not, the system can discard it.

Although keyword categorisation has been implemented before, it has not been applied to hypertext links, nor for the purpose of assisting readers in navigating documents. The value that this adds to the original document is significant, and can be developed even further through the addition of subsequent systems.

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